

What is claimed is:

1. A microwave plasma processing system comprising:
 - a processing vessel;
 - an antenna for introducing microwaves into said processing vessel;
 - a microwave supply source for supplying said microwaves to said antenna; and
 - a connecting waveguide for connecting said microwave supply source to said antenna,
 - wherein a plasma is produced in said processing vessel by said microwaves introduced from said antenna,
 - said antenna having a plurality of substantially ring-shaped antenna waveguides which are substantially concentrically arranged,
 - each of said antenna waveguides comprising a rectangular waveguide having a wall in which a plurality of slots are formed at intervals, a proximal end portion of each of said antenna waveguides being connected to said connecting waveguide.
2. A microwave plasma processing system as set forth in claim 1, wherein at least one of said antenna waveguides of said antenna is provided with an aperture variable device for varying the size of an aperture at said proximal end portion.
3. A microwave plasma processing system as set forth in claim 1, wherein a terminal end portion of each of said antenna waveguides of said antenna is closed with a conductor.
4. A microwave plasma processing system as set forth in claim 1, wherein a terminal end portion of each of said antenna waveguides of said antenna is closed with a microwave absorber.
5. A microwave plasma processing system as set forth in claim 1, wherein said connecting waveguide extends to the proximal end portion of innermost one of said antenna waveguides in a substantially radial direction with respect to each of said antenna waveguides.

6. A microwave plasma processing system as set forth in claim 5, wherein a terminal end portion of said connecting waveguide is closed with a conductor.

7. A microwave plasma processing system as set forth in claim 5, wherein a terminal end portion of said connecting waveguide is closed with a microwave absorber.

8. A microwave plasma processing system comprising:
a processing vessel having a microwave transmittable top wall;

an antenna mounted on said top wall of said processing vessel;

a microwave supply source for supplying said microwaves to said antenna; and

a connecting waveguide for connecting said microwave supply source to said antenna,

wherein a plasma is produced in said processing vessel by said microwaves introduced from said antenna,

said antenna having a plurality of substantially ring-shaped antenna waveguides which are substantially concentrically arranged,

each of said antenna waveguides comprising a rectangular waveguide having a bottom wall in which a plurality of slots are formed at intervals, the proximal end portion of each of said antenna waveguides being connected to said connecting waveguide.

9. A microwave plasma processing system as set forth in claim 8, wherein at least one of said antenna waveguides of said antenna is provided with an aperture variable device for varying the size of an aperture at said proximal end portion.

10. A microwave plasma processing system as set forth in claim 8, wherein a terminal end portion of each of said antenna waveguides of said antenna is closed with a conductor.

11. A microwave plasma processing system as set forth in claim 8, wherein a terminal end portion of each of said antenna waveguides of said antenna is closed with a microwave absorber.

12. A microwave plasma processing system as set forth in claim 8, wherein said connecting waveguide extends to the proximal end portion of innermost one of said antenna waveguides in a substantially radial direction with respect to each of said antenna waveguides.

13. A microwave plasma processing system as set forth in claim 12, wherein a terminal end portion of said connecting waveguide is closed with a conductor.

14. A microwave plasma processing system as set forth in claim 12, wherein a terminal end portion of said connecting waveguide is closed with a microwave absorber.